CAD - COMPUTER-AIDED DESIGN

CAD 105 **4 credit hours (lecture: 3 | lab: 2)**
Industrial Design Engineering
Course introduces industrial design and its place in the manufacturing process. Content includes design visualization, creation and application of three-dimensional (3D) computer-generated models in today's manufacturing, communication, and publishing industries; creating a 3D computer model component design from original idea, pencil sketching, concept analysis and use of surface and solid modeling software.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring

CAD 107 **4 credit hours (lecture: 3 | lab: 2)**
Introduction to 3D Printing
Course is an introduction to 3D printing with emphasis on design of 3D printed parts and operational theory of 3D printers. The computer will be used by students to create three-dimensional models and prepare the models to print using a variety of filaments for applications in mechanical design, manufacturing and industrial design. Course content covers a step by step approach to creating models and setting up a 3D printer.
Recommended: Knowledge of computer applications and web based learning.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring | Summer

CAD 116 **3 credit hours (lecture: 2 | lab: 2)**
Basic AutoCAD
Course is first of three in drafting and design using AutoCAD software. Content includes setting up a drawing electronically; drawing and editing; construction techniques; display commands; effective layering; dimensioning and detailing; using blocks, and plotting.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring | Summer

CAD 117 **4 credit hours (lecture: 4 | lab: 0)**
Intermediate AutoCAD
Course is the second of three in drafting and design using AutoCAD software. It covers assigning attributes to blocks, using external references, grouping and filtering entities. Three-dimensional (3D) topics include dynamic viewing, defining coordinate systems, extrusions, wireframe modeling, surface modeling, and an introduction into solid modeling.
Recommended: CAD 116.
Instruction Type: In-Person | Online Fee: $50
Term Typically Offered: Fall | Spring

CAD 118 **4 credit hours (lecture: 4 | lab: 0)**
Advanced AutoCAD
Course is the last of three in drafting and design using AutoCAD software. Content includes solid modeling, including 3D Modeling, parametric design and rendering. The focus is on practical application for digital manufacturing, prototyping, 3D printing and assemblies for mechanical and architectural drawings.
Recommended: CAD 116 and CAD 117.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring

CAD 134 **4 credit hours (lecture: 3 | lab: 2)**
Basic AutoCAD for Interior Design
Course introduces Computer-Aided Design with emphasis on interior design applications. Students use the computer to draw and plot floor plans, lighting and electrical plans, and elevations. The course covers setting up a drawing electronically, drawing and editing, construction techniques, display commands, effective layering, dimensioning and detailing, using blocks, and plotting.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring

CAD 136 **4 credit hours (lecture: 3 | lab: 2)**
Advanced AutoCAD for Interior Design
Second course in AutoCAD for interior design covers creating and utilizing advanced drawing techniques; developing complex interior design applications including lighting, electrical plans, elevations, and 3D drawings; producing drawings with unconventional angles; using symbols/blocks and assigning attributes for use in drawing applications; and producing drawing plots with multiple scales with advanced functionality.
Recommended: CAD 134.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Spring

CAD 191 **4 credit hours (lecture: 3 | lab: 2)**
Emergency Response Pre-Plan Design
A course for emergency responders using computer- based software. Course introduces emergency response applications with emphasis on emergency pre-planning. It focuses on designing plans for use by emergency responders using Firehouse, AutoCAD, and other applicable software. The computer will be used by students to document information about the condition of assets, including buildings and personnel for transmission to emergency operations managers and personnel who need it for planning response, crisis management, and recovery efforts. Credit toward graduation cannot be received for both CAD 191 and FIR 191.
Instruction Type: In-Person | Online Fee: $50

CAD 210 **4 credit hours (lecture: 3 | lab: 2)**
Industrial Design Techniques
Course teaches skills for creating prototypes of computer models using 3D modeling and prototyping software. Hands-on lab course involves critical thinking skills related to industrial design, digital prototyping and manufacturing. Content includes industrial design techniques using computer models for laser cutting, fasteners, 3D printing and production processes that employ computer-controlled machines and prototyping equipment.
Recommended: General computer skills.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring

CAD 220 **4 credit hours (lecture: 3 | lab: 2)**
Introduction to Building Information Modeling - Revit
Revit is a Building Information Modeling (BIM) software widely used by architects, engineers and contractors to create a unified model that all disciplines and trades can use to complete their work. Revit enables students to create full 3D architectural project models and place them in working drawings. Topics include creating floor plans, adding views, adding various building components, and creating sheets for plotting.
Recommended: Knowledge of CAD drafting.
Instruction Type: In-Person | Online | Hybrid Fee: $50
Term Typically Offered: Fall | Spring

CAD 223 **3 credit hours (lecture: 3 | lab: 0)**

Introduction To 3D Studio Max

Course introduces 3D Studio MAX, the leading software in its field, preferred choice of animators, designers and engineers. Content includes capabilities of animation and rendering features as used in such diverse applications as engineering and architectural visualization, accident recreation and multimedia presentations.

Instruction Type: In-Person | Online Fee: $50

Term Typically Offered: Fall | Spring | Summer

CAD 224 **4 credit hours (lecture: 3 | lab: 2)**

Advanced Building Information Modeling - Revit

This is the second course in Building Information Modeling (BIM) Technologies for Revit Architecture. Course examines how to use Revit to design 3D models that simultaneously document the project and generate 2D and 3D architectural drawings. Topics include site development, interoperability, linking and managing projects, advanced modeling methods, design options, phasing, work sharing and 2D and 3D presentation techniques.

Recommended: CAD 220 or consent of instructor.

Instruction Type: In-Person | Online | Hybrid Fee: $50

Term Typically Offered: Fall | Spring

CAD 228 **4 credit hours (lecture: 3 | lab: 2)**

Revit MEP – Mechanical, Electrical, Plumbing

Course in BIM Technologies for Revit will focus on HVAC, Plumbing and Electrical Systems. Topics include working with linked architectural files, piping systems and fire protection systems, electrical components, circuits, cable tray and conduits, annotating construction documents and creating schedules.

Recommended: CAD 220 or consent of instructor.

Instruction Type: In-Person | Online | Hybrid Fee: $50

Term Typically Offered: Summer

CAD 230 **4 credit hours (lecture: 3 | lab: 2)**

Introduction to SolidWorks

Course explores the theory and application of solid modeling techniques for product design and manufacturing, using SolidWorks parametric modeling software. Content includes transforming computer sketches into three-dimensional features; parametric modeling techniques further explored to create computer models of plastic molded parts; casting; and sheet metal; photorealistic rendering and animation of three dimensional models to visually communicate design ideas.

Prerequisite: General computer skills.

Instruction Type: In-Person | Online | Hybrid Fee: $50

Term Typically Offered: Fall | Spring | Summer

CAD 232 **4 credit hours (lecture: 3 | lab: 2)**

Intermediate SolidWorks

Course offers an intermediate exploration of the theory and application of SolidWorks design software. It builds up on skills learned in CAD 230 to broaden students' modeling expertise and prepare them for the advanced features covered in CAD 234. Course content includes step-by-step approach to teach students new design skills by creating and editing solids, surfaces, sheet metal, multibody parts, assemblies, and detail drawings.

Recommended: CAD 230.

Instruction Type: In-Person | Online | Hybrid Fee: $50

Term Typically Offered: Fall | Spring

CAD 234 **4 credit hours (lecture: 3 | lab: 2)**

Advanced SolidWorks

This course is an advanced exploration of the theory and application of solid modeling techniques for product design, manufacturing and industrial design using SolidWorks. Topics covered include photorealistic rendering of computer models, animation and advanced computer modeling techniques. Design topics include molded parts, sheet metal, detail drawings and assemblies.

Recommended: CAD 232.

Instruction Type: In-Person | Online | Hybrid Fee: $50

Term Typically Offered: Spring

CAD 240 **3 credit hours (lecture: 2 | lab: 2)**

Introduction to Autodesk Inventor

Course explores issues in the field of computeraided design using Autodesk Inventor. Content includes basic parametric modeling techniques using sketching tools; creating basic three-dimensional parts, assemblies, and 3-D presentations.

Instruction Type: In-Person | Online Fee: $50

Term Typically Offered: Fall | Spring

CAD 290 **1-4 credit hours (lecture: 1-4 | lab: 1-4)**

Topics in Computer-Aided Design

Course explores major issues in the field of Computer Aided Design. Topics will be selected from the following subspecialties as they relate to the design process: up-and-coming CAD software packages, animation, multimedia, Internet and simulation. Course has a different focus and/or scope from other courses currently offered in the department and may be taken for credit up to four times on different topics. Fee Varies. Prerequisite may vary by topic.

Instruction Type: In-Person | Online